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# **ICD-9-CM Procedure Code for Anular Repair**

**ICD-9-CM Coding & Maintenance Committee  
September 27, 2007**

***Reginald Davis, MD, FACS***

**Chief of Neurosurgery  
Greater Baltimore Medical Center**

# Speaker Background

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## ■ **Reginald Davis, MD, FACS**

- Founder of Baltimore Neurosurgical Associates, Baltimore, MD.
- Chief of Neurosurgery at Greater Baltimore Medical Center.
- Faculty Member at John Hopkins School of Medicine and University of Maryland.
- Fellow of the American College of Surgeons.
- Diplomate of the American Board of Surgery.

# Anular Repair Application Summary

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- Application submitted by David Wong, MD:
  - Orthopedic Spine Surgeon, Denver CO
  - Past President, North American Spine Society (NASS)
  
- Request code creation to report repair of the annulus fibrosus with graft or prosthesis, including:
  - Microsurgical suture repair
  - Soft tissue re-approximation repair with tension bands
  - Surgical mesh repair

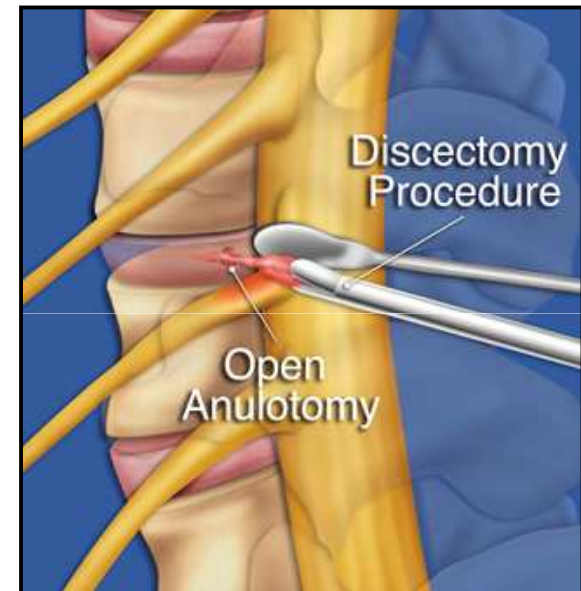
# Issue Summary

## ■ Anular Repair:

- Lumbar discectomy surgery is performed to remove a herniated disc of the spine.
- Traditionally, an open pathway was left in the annulus following discectomy surgery.
- Today, surgeons are beginning to repair the annulus fibrosus.

## ■ Coding Issue:

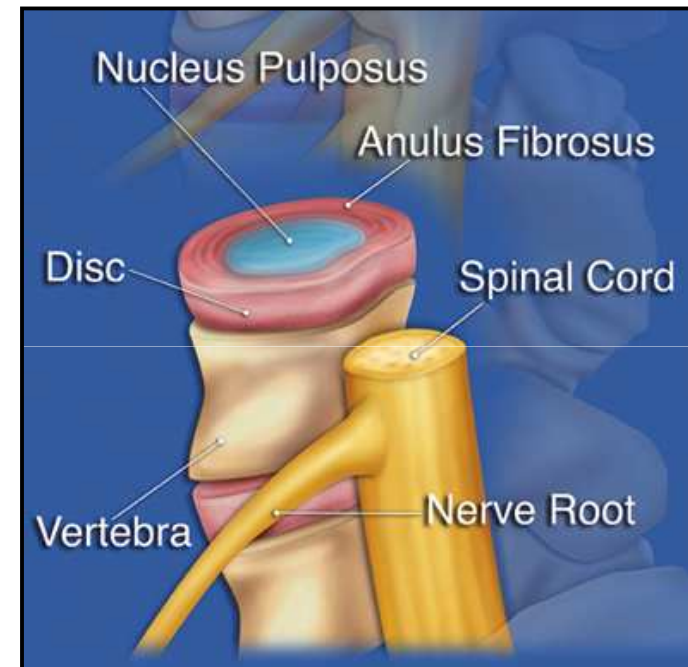
- Although codes exist for discectomy, there is no unique code(s) to report use of instruments and insertion of devices to repair the annulus fibrosus.



# Background – Lumbar Disc Anatomy

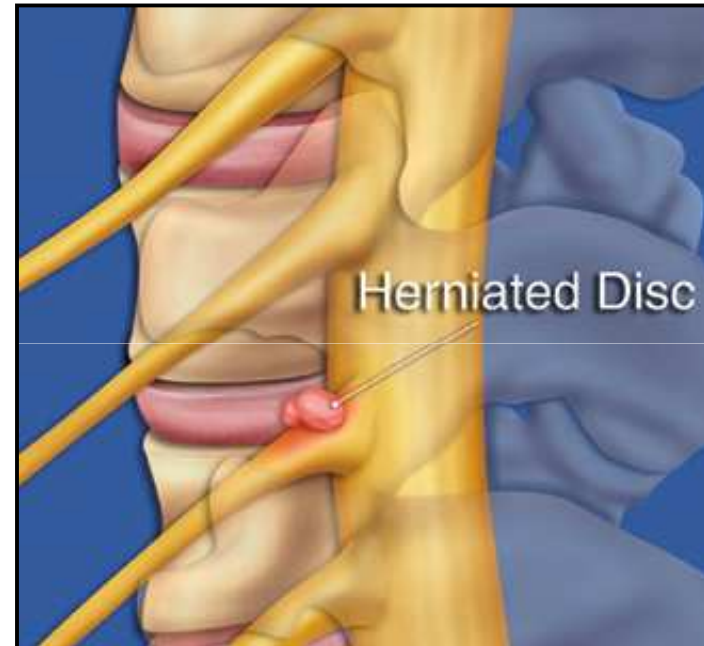
## ■ The Disc is Comprised of:

- ***Nucleus Pulposus*** – soft, gel-like inner substance.
- ***Anulus Fibrosus*** – tough, outer ring that contains the nucleus pulposus.



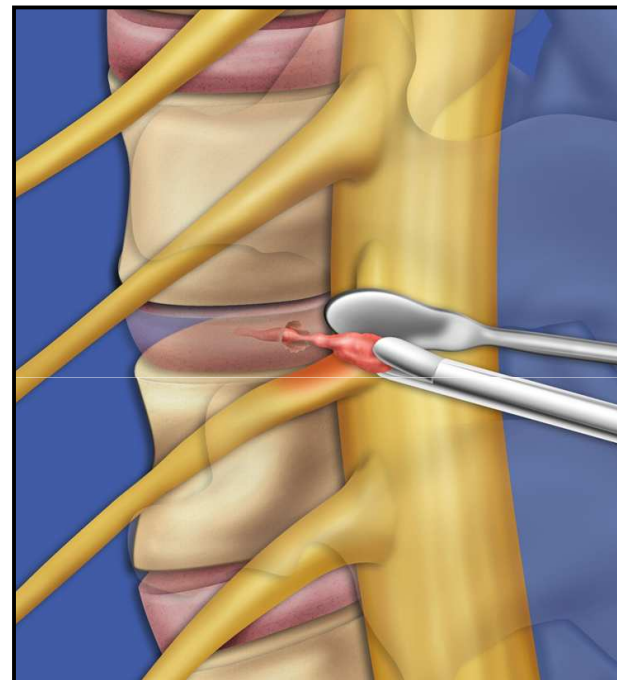
# Background – Herniated Disc

- Herniated Disc:
  - Rupture or protrusion in anulus fibrosus.
  - Fragment compresses nerve root causing pain.



# Background – Lumbar Discectomy

- Lumbar Discectomy:
  - Surgical procedure to remove a herniated disc.
  - Most frequently performed spinal surgery.
  - HCUP data shows majority of procedures performed in the inpatient hospital setting.<sup>1</sup>



<sup>1</sup>Reden & Anders, Ltd (2002).

# Discectomy Clinical Outcomes

- Lumbar discectomy surgery is a well accepted procedure with a proven track record.
- However, there is still room for improved outcomes:
  - 28% of patients continue to suffer from back or leg pain following discectomy surgery<sup>2,3</sup>.
  - These patients either continue with conservative treatment or require a re-operation.

<sup>2</sup>Loupasis et al. Seven-to-20-Year Outcome of Lumbar Discectomy. Spine 1999;24: pp 2313-2317.

<sup>3</sup>Cauthen et al. Economic Impact of Improving Outcomes of Lumbar Discectomy. Study presented at the 23rd Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Phoenix, AZ – March 2007.

# Discectomy Reoperation Rates

Large, published, population based studies report re-operation rates of **9-25%** within 5 years.

Author	Follow-Up	Re-Op Rate	# Patients	Population
<sup>4</sup> Hu	4 years	9.4%	2,287	Ontario, Canada
<sup>5</sup> Malter	5 years	15%	3,787	Washington State
<sup>6</sup> Atlas	5 years	19.4%	273	State of Maine
<sup>7</sup> Osterman	10 years	14%	35,309	Finland
<sup>8</sup> Atlas	10 years	25%	217	State of Maine

<sup>4</sup>Hu R, et al. A Population Based Study of Reoperations After Back Surgery. Spine 1997;22:2265-2271.

<sup>5</sup>Malter A., et al. 5-Year Reoperation Rates After Different Types of Lumbar Surgery. Spine 1998;23:814-820.

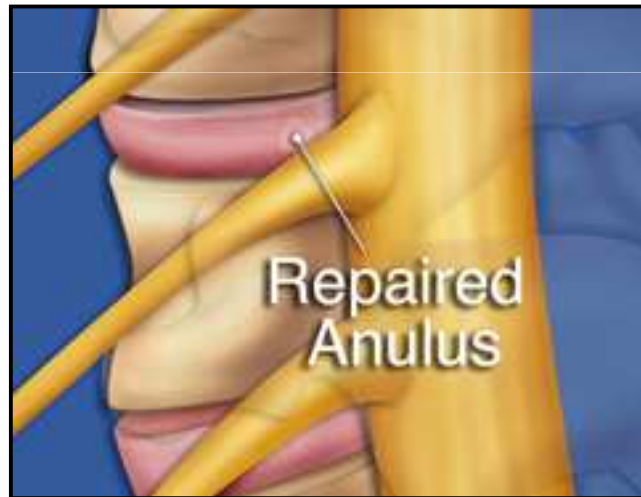
<sup>6</sup>Atlas S., et al. Surgical and Nonsurgical Management of Sciatica Secondary to Lumbar Disc Herniation: Five-Year Outcomes from the Maine Lumbar Spine Study. Spine 2001;26:1179-1187.

<sup>7</sup>Osterman H., et al. Risk of Multiple Reoperations After Lumbar Discectomy: A Population Based Study. Spine 2003;28:621-627.

<sup>8</sup>Atlas et. al. Long-Term Outcomes of Surgical and Nonsurgical Management of Sciatica to a Lumbar Herniation: 10 Year Results from the Maine Lumbar Spine Study. Spine 2005;30:927-935.

# Why Repair the Anulus?

- Reduce re-operations and improve patient outcomes by:
  - Restricting nucleus material from re-extruding<sup>9</sup>
  - Reducing inflammation and scar formation<sup>10,11</sup>
  - Enabling less extensive disc removal<sup>12</sup>



<sup>9</sup>Cauthen, JC. Chapter 11. Microsurgical Anular Reconstruction (Anuloplasty) Following Lumbar Microdiscectomy: pp 155-177 . In: Spinal Arthroplasty; A New Era in Spine Care, Guyer RD, editor. St. Louis MO: Quality Medical Publishing, 2005.

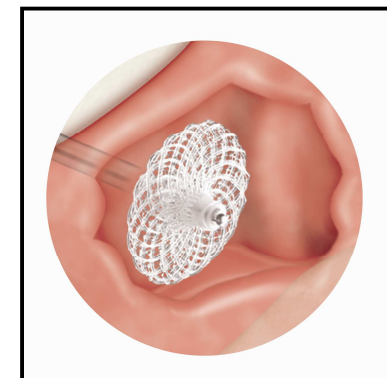
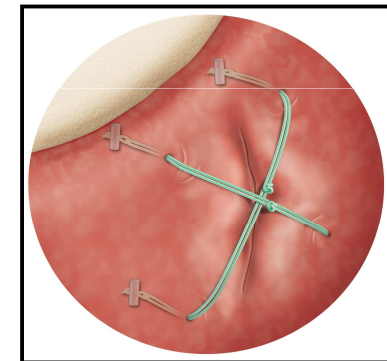
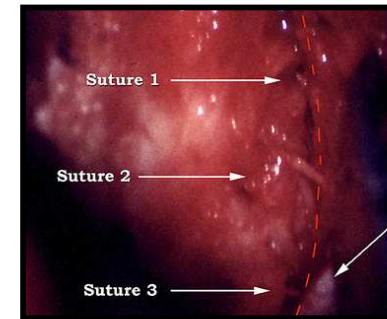
<sup>10</sup>Kawakami M, et al. The Role of Phospholipase A2 and Nitric Oxide in Pain-Related Behavior Produced by an Allograft of Intervertebral Disc Material to the Sciatic Nerve of the Rat. Spine 22(10):1074-1079, 1997.

<sup>11</sup>Omarker K, et al. Pathogenesis of Sciatic Pain: Role of Herniated Nucleus Pulposus and Deformation of Spinal Nerve Root and Dorsal Root Ganglion. Pain 78(2):99-105, 1998. 10

<sup>12</sup>Carragee et al. A Prospective Controlled Study of Limited Versus Subtotal Posterior Discectomy: Short-Term Outcomes in Patients with Herniated Lumbar Intervertebral Discs and Large Posterior Anular Defect. Spine 2006; 31: pp653-657.

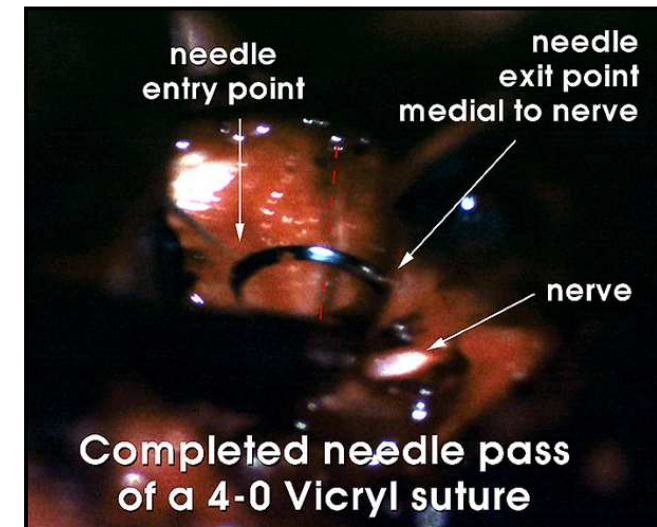
# Current Procedure Options

- Microsurgical Suture Repair
- Soft Tissue Re-Approximation Repair With Tension Bands
- Surgical Mesh Repair



# Microsurgical Suture Repair

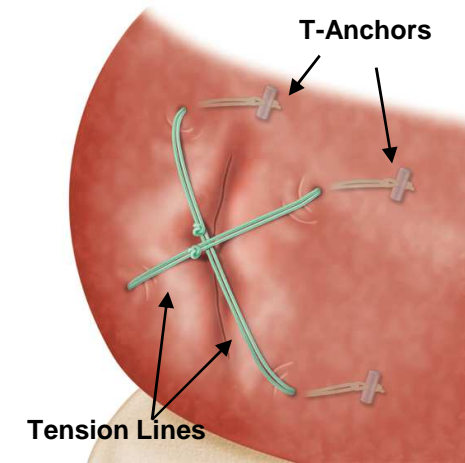
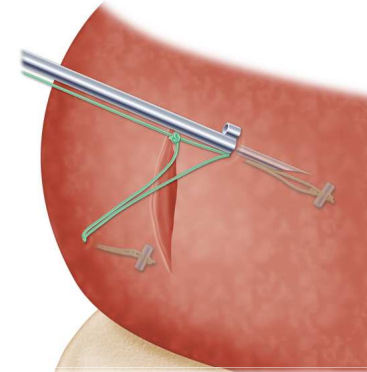
- Technically difficult and time consuming (approx 45 minutes).
- Technique often achieves closure with two or three 4-0 absorbable sutures with manual knot tying.
- Fascial autograft may be used to augment the repair.
- 2 year human clinical data has shown a 68% reduction in reop rates.<sup>9</sup>



<sup>9</sup>Cauthen, JC. Chapter 11. Microsurgical Anular Reconstruction (Anuloplasty) Following Lumbar Microdiscectomy: pp 155-177 . In: Spinal Arthroplasty; A New Era in Spine Care, Guyer RD, editor. St. Louis MO: Quality Medical Publishing, 2005.

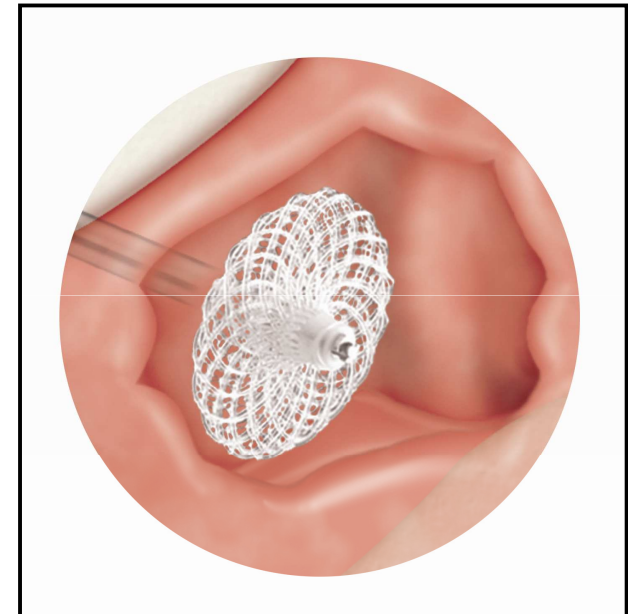
# Soft Tissue Re-Approximation Repair with Tension Bands

- Soft tissue is re-approximated with the use of Tension Band System consisting of:
  - Soft tissue T-anchors
  - Tension lines
- Specialized delivery tools facilitate placement and insertion.
- System allows for easier and more efficient repair than microsurgical suturing.



# Surgical Mesh Repair

- Surgical Mesh System consists of:
  - Polyester (PET) mesh
  - Anchor band assemblies
- Specialized delivery tools facilitate placement and insertion.
- Mesh system allows for repair of larger size defects than microsurgical suturing or tension band repair.



# Summary

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- Anular repair following lumbar discectomy is a worthwhile procedure to improve patient outcomes.
- Today, surgeons are beginning to repair the annulus fibrosus by using various procedure options.
- No unique ICD-9-CM procedure code(s) exist to report use of instruments and insertion of devices to repair the annulus fibrosus.

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**Thank You**